

South Dakota State University

## Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange

---

SDSU Extension Circulars

SDSU Extension

---

6-1950

# 4-H Project Guide: Swine Production

Clifford Iverson

James O'Connell

Follow this and additional works at: [http://openprairie.sdstate.edu/extension\\_circ](http://openprairie.sdstate.edu/extension_circ)



Part of the [Agriculture Commons](#)

---

### Recommended Citation

Iverson, Clifford and O'Connell, James, "4-H Project Guide: Swine Production" (1950). *SDSU Extension Circulars*. 537.  
[http://openprairie.sdstate.edu/extension\\_circ/537](http://openprairie.sdstate.edu/extension_circ/537)

This Circular is brought to you for free and open access by the SDSU Extension at Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. It has been accepted for inclusion in SDSU Extension Circulars by an authorized administrator of Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. For more information, please contact [michael.biondo@sdstate.edu](mailto:michael.biondo@sdstate.edu).



# 4-H Project Guide

Published by AGRICULTURAL EXTENSION SERVICE

SOUTH DAKOTA STATE COLLEGE



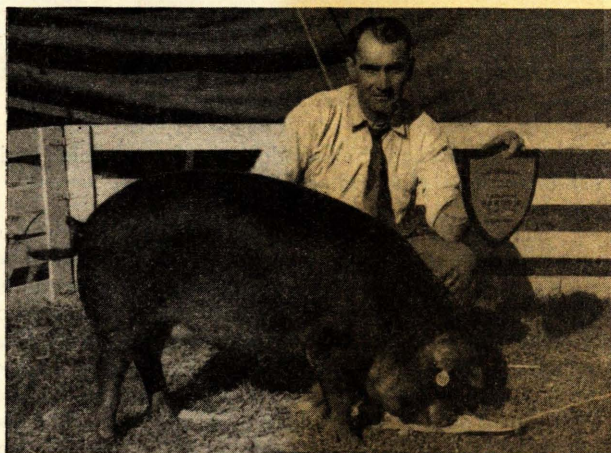
TO MAKE  
THE BEST  
BETTER

## SWINE PRODUCTION

By CLIFFORD IVERSON and JAMES O'CONNELL\*

**Choosing a Breed.** The question "Which breed shall I raise" confronts every purebred hog producer. He may have a personal preference which will assist him in choosing a breed. If he has no such preference, it would be well worth while to consider the most popular breed in the community. This procedure will help the breeder to gain popularity, in establishing a reputation, and in attracting more buyers into the community. Each breeder may believe he has the best breed because of size, feeding qualities, higher dressing percentage or some other factor; but there is more difference within breeds than between breeds. The six major breeds being produced in South Dakota are Berkshire, Chester White, Duroc, Hampshire, Poland China, and Spotted Poland China. The Yorkshire, Minnesota Number One and the Hereford breeds are present in much smaller numbers.

**Selecting the sow or gilt.** The beginner selecting a sow or gilt is interested in one showing considerable type and breed character, since in many cases this animal may be the foundation individual for the future herd. The proper type to select can be determined by studying outstanding animals of the breed at shows or possibly through the breed magazines. Select a sow showing femininity. This is indicated by her refinement and quality of head, also smoothness of body. She should show excellent mam-



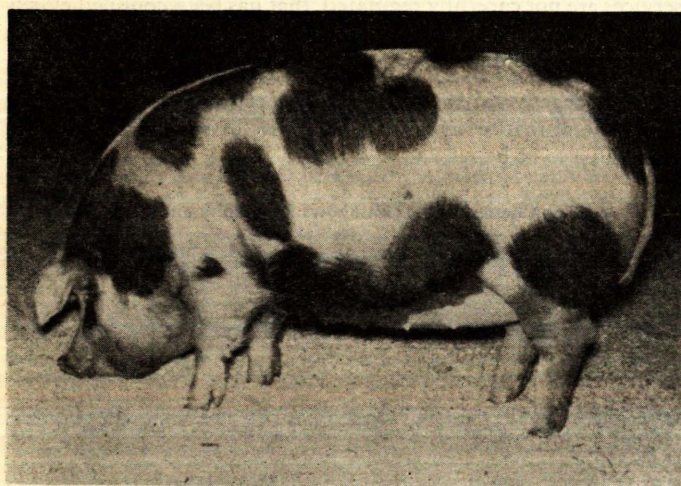
Note the Desirable Conformation and Quality of the Grand Champion Barrow at the 1949 National Barrow Show, Austin, Minn. He was a Duroc.

mary development with at least 12 good teats. A good gilt or sow will exhibit a matronly, quiet disposition rather than a wild nervous temperament. Size for age is important. Plenty of length and stretch of body; long, deep, smooth sides; smooth, well-laid shoulders; good width of back and loin; deep, smooth, plump, firm hams; full heart girth, wide chest floor; and straight, strong legs with short, strong pasterns. Symmetry and balance of these factors means a clean-cut sow with vitality and ruggedness.

### Ancestry Important in Selection

Select a gilt or sow whose ancestry have been good producers, and is out of a litter of at least eight good pigs. Avoid irregular breeders, poor sucklers, and nervous sows. Pedigrees should not be overlooked in choosing a purebred gilt. The pedigrees should indicate the names of animals who have been doing a good job for the breeder. It is entirely possible that the names will not be familiar to the boy starting out with a purebred sow litter project, but the field men and other breeders of the particular breed of hogs will know something of the pedigrees.

The producer should bear in mind that big litters are governed by heredity, and only through strict selection can a high rate of prolificacy be retained. This selection must be on the basis of



This Is a Desirable Type Spotted Poland China Gilt

\**Extension Animal Husbandmen*

U. S. Department of Agriculture, Cooperating

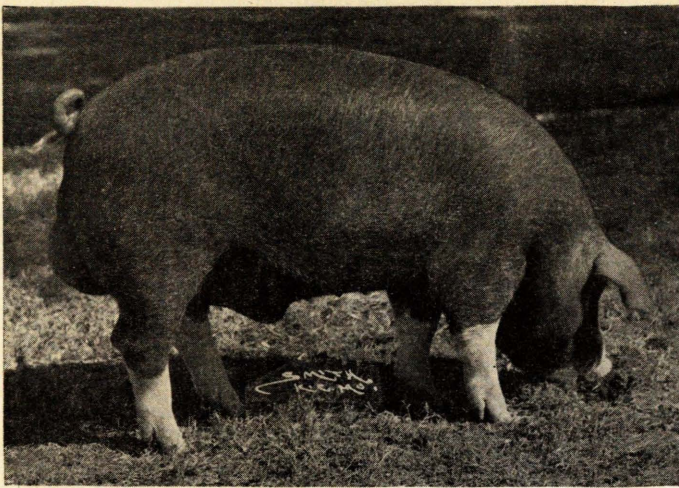
In Furtherance Acts of Congress May 8, June 30, 1914

Extension Circular 458

Geo. I. Gilbertson, Director of Extension

June, 1950





A Poland China Boar Showing Desirable Breed Type.

productivity through the introduction of new strains by individuals of approved type and prolific ancestors.

**Selecting the boar.** It is generally admitted by hog breeders that it is difficult to select boar pigs that stay good. They offer more problems during their development than gilts and barrows. The boar, however, should show breed character; should be growthy, rugged and exhibit considerable masculinity. The entire topline should be heavily muscled and supported in a smooth and uniform arch. The loin must show strength and smoothness, and the rump should be long and consistently wide. The shoulders should be deep, and smooth; the flanks full and the underline neatly carried. The hams must be deep, balanced in fullness, and smooth. Moderate sized jowls are preferred; they should be sufficiently developed to contribute to the general balance and vigor of the boar, but smooth and firm. The head should be well balanced in length and width, and show vigor and neatness. The ears should be medium of texture and size and well placed.

The legs of a boar should be squarely placed and straight. The bone should be well developed, but not coarse. Quality and style are indispensable. They indicate, to a certain extent, his ability to stay smooth and sound. A boar lacking in quality generally develops excessive shields over the shoulders and sides. The hair should be smooth and show quality. Swirls in the hair are a serious defect and curly hair indicates coarseness.

Another factor hogmen consider in selecting a boar is whether or not he will improve the apparent weakness of the sows. For example, if the sows are weak of pastern the boar should be particularly strong in this respect.

### Breeding Practices for Purebred Growers

**Breeding Practices.** Purebred breeders practice one of the two following methods of breeding:

(a) "Outcrossing" or "outbreeding" is the mating of animals of the same breed that are completely unrelated.

(b) "Inbreeding" is the mating of animals which are closely related such as parent to daughter, or brother to sister. "Line breeding" is a form of inbreeding but the animals are not as closely related as parent-offspring or brother-sister. Inbreeding should be practiced only by breeders who are experienced and have a very good knowledge of the ancestry of the breeding stock. Families of livestock that are intensely inbred for several generations without very careful selection are likely to develop constitutional weakness, sterility, non-resistance to disease and decline in size. Characteristics of inbred parents are more readily transmitted to the offspring than from outbred animals. Should

there be undesirable characteristics present, either in the animals or in the ancestry, there is a greater chance of the weakness appearing in the next generation.

Commercial hog producers follow one of two systems of mating as a rule:

(a) "Crossbreeding" involves the use of two or more breeds. Good purebred boars should be used in this practice. If a two-breed cross is followed, for example, a Poland China boar might be used on Hampshire sows. In the next generation, a Hampshire boar would be used on the Hampshire-Poland China gilts; the next year a Poland boar, etc. If three breeds are used during the third mating season a boar of a third breed would be used, and then use boars of the same breeds in the same sequence in years to come.

(b) The use of one breed should likewise involve the use of good purebred boars. Such programs generally start with purebred gilts and proceed from there.

### Farrow Sows at 12-14 Months

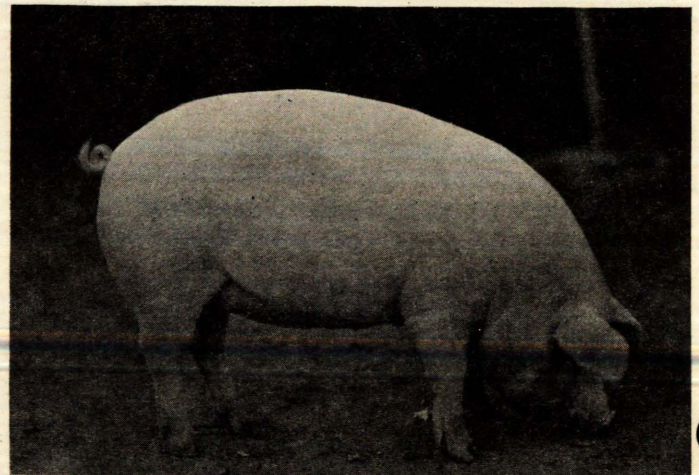
**The Age to Breed.** The age to breed is an important question to the hog producer. As a general rule, earlier breeding results in a saving of feed, interest, risk and reduces the cost of pigs at birth. The gilt that is well developed may be bred safely to farrow when 12 to 14 months of age.

The gestation period of a sow is 112 to 114 days. This means that a sow bred on November 10 would farrow on March 1. Generally, early farrowing is the more favorable for the early market. However, this question will vary with the location of the farm, housing facilities, and possible individual preference.

The number of sows that a boar can safely breed during a given season will depend on age, natural vigor, length of breeding season, distribution of services, feeding and management. The boar is at his best from the age of 18 months up to four years. Generally speaking, hogmen allow 15 sows per boar pig and 30 to 40 sows per boar 1½ years old or older. A boar given plenty of exercises and feed preceeding the breeding season, will be more vigorous. Much depends on the judgment and experience of the herdsman. No boar can perform satisfactorily that is mistreated, whose services are not carefully regulated, that has been confined closely to a dry lot, or that is fat and lazy as the result of too much corn and too little exercise.

The boar, especially if a young one, requires plenty of protein and mineral matter in his ration. Plenty of sunshine and green feed will also be beneficial.

This Chester White Gilt Shows Femininity and Style.





# Feeding the Hog

**Nutritive Requirements.** The nutritive requirements of hogs consist of energy-producing carbohydrates, protein, vitamins, and minerals.

## Carbohydrates or Fattening Feeds

**Corn** is the leading hog feed in South Dakota. It is a fattening feed containing 80 per cent total digestible nutrients and 6.6 per cent digestible protein. It is generally recommended that corn be fed in the ear or shelled form. Grinding is recommended when it is to be mixed with other grains. The only time corn is soaked is when it is exceptionally hard and dry. Corn cob meal is too bulky for hogs.

**Oats** are a good growing feed. They contain 70 per cent total digestible nutrients and 9.4 per cent digestible protein. The fiber content of 11 per cent make them too bulky to be fed as the sole feed for fattening pigs. They may be used up to one-fourth in the ration for breeding stock. Hulled oats, hullless oats, or rolled oats make an excellent feed for the pigs during the suckling period.

Oats should be ground medium fine for hogs; however, whole oats may be fed to sows. Soaking whole oats is not recommended.

**Barley** is a good hog feed. It is worth 90 to 95 per cent the value of corn, pound for pound. Barley contains 73.2 per cent total digestible nutrients, and 10.8 per cent digestible protein. Barley should always be fed ground for best results. Some authorities feel it gives its highest returns when it makes up not more than half the ration being fed. Scabby barley is sometimes fed. Pigs will probably refuse to eat it and may become sick if they eat much of it.

**Wheat** is an excellent feed for all classes of hogs, but generally is too expensive to feed. If it is ground, it is considered to be 5 to 10 per cent more valuable than corn. Wheat contains 80.7 per cent of total digestible nutrients and 13.3 per cent digestible protein.

**Sorghum** grains are excellent substitutes for corn in swine production, and experiments have shown grain sorghum to be worth up to 90 per cent the value of corn. Sweet sorghum grain is not nearly as palatable for hogs and is generally only 65 to 70 per cent as valuable as corn. Grain sorghums have approximately 80 per cent total digestible nutrients and almost 8 per cent digestible protein.

**Rye** is worth about 90 per cent of corn if it is fed ground. It should not be used for more than one-fourth to one-half the grain ration since it will cause scouring if in greater proportion than mentioned. Rye should not be fed to brood sows as it may contain ergot which may cause abortion. Rye contains 76.1 per cent total digestible nutrients and 10 per cent digestible protein.

## Protein Feeds

**Tankage** contains approximately 60 per cent protein of which about 90 per cent is digestible. Tankage is generally rich in mineral.

**Meat Scraps** contain a little less protein but are generally considered a little better feed, pound for pound, than tankage for winter and dry lot feeding of growing pigs and pregnant sows. As a rule, meat scraps sell for somewhat less than does tankage.

**Skim Milk** contains about 3.8 per cent protein. It is the best protein supplement produced on the farm. It should be fed sweet and fresh to young pigs, but may be fed soured to older pigs.

The value depends upon the amount fed, the age of the pigs, and the price of other feeds. As a rule, it should be fed at the rate of about two pounds for every one pound of grain fed.

**Butter Milk** is generally considered to be about the same value as skim milk and fed in the same manner.

**Soybean Oil Meal** has approximately 37 per cent digestible protein. It is considered an excellent protein feed for all classes of swine.

For the greatest value and return, it should be mixed with protein of an animal source. Soybean oil meal does not produce

soft pork, but raw soybeans do. Consequently, it is more desirable to sell the soybeans and buy back the oil meal.

**Linseed Oil Meal** contains approximately 33 per cent digestible protein. It is more laxative in nature and for that reason is often used for winter and dry lot feeding. It should not be fed alone for the maximum returns. An animal protein fed with linseed will increase its efficiency.

**Bran** contains 14.5 per cent of digestible protein. It is rather bulky and for that reason is not normally fed except to brood sows at farrowing time.

**Middlings** contain about 15 per cent digestible protein and constitute a good feed for the sow and pigs during the nursing period.

## Vitamins Essential for Hogs

Vitamins have come to be recognized as being very essential for the proper nutrition of swine. A lack of vitamins in the ration results in the so-called "deficiency" diseases. Hogs are known to require vitamin A, B Complex vitamins including panathenic acid, riboflavin, thiamine and pyroxidene, and niacin, and vitamin D.

Normally, a well-balanced grain ration fed on good pasture, meets all of these vitamin requirements. When the hogs are not on pasture, choice field-cured alfalfa fed with a good ration will adequately meet the requirements. The feeder should remember that the hogs have a relatively small stomach and that the alfalfa feed should be of choice quality—fine stems, an abundance of leaves and bright green in color. Regular access to sunshine will generally take care of all vitamin D requirements.

## Grains Do Not Meet Mineral Requirements

The mineral requirements of swine are not met in the grain rations they receive inasmuch as most of their diet consists of grains that are somewhat low in mineral. The hog, being full-fed, gains in size and condition rapidly. To do this, he needs phosphorus, calcium, and salt if the skeletal system is to develop properly.

Salt is one of the essential items for swine. Stabilized iodized salt should be fed free choice in the ground form for all hogs at all times. Be sure the hogs are accustomed to salt gradually before making it available free choice. Be sure to provide drainage in the box from which salt is being fed as brine is toxic to hogs.

The following mineral mixture fed free choice along with stabilized iodized salt, fed free choice, will take care of the mineral requirements of swine. Unless there is a known trace mineral deficiency in the area, it is not necessary to feed minerals containing the trace minerals. If the pigs are thrifty and healthy, there is very little value in using expensive mineral mixtures.

40 lbs. of steamed bone meal  
20 lbs. of stabilized iodized salt  
40 lbs. of ground limestone  
one lb. of ferrus sulphate

## Water Needed the Year Around

Adequate water is highly essential the year around if pigs are to make thrifty gains. Experiments have shown that at weaning time pigs consume daily 12 pounds of water per 100 pounds of live weight. This amount decreases to four or five pounds per 100 pounds of live weight during the fattening period. A few points to keep in mind with respect to water for hogs are:

1. Keep plenty of fresh, clean water available at all times for hogs.
2. Place the waterers fairly near the feed supply; in the shade if possible.
3. During the winter months, remove the chill from water by use of a heater or some other method. Don't force hogs to drink ice water.
4. Be sure to check the fountains frequently to be sure that water is flowing.

## Good Pasture Lowers Feed Cost

In South Dakota, the use of good pastures for swine will result in considerably cheaper gains. It is estimated that through the



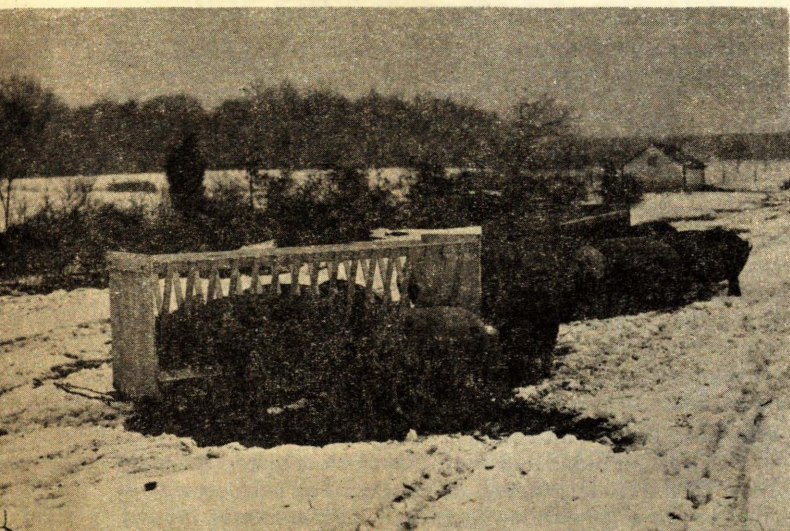
entire pasture season, each acre of good pasture will save 800 to 1000 pounds of grain and protein.

For best results on pasture, use ground that has had no hogs on it for at least two years.

### PERMANENT PASTURES

Permanent pastures are those that are biennial or perennial in nature. In other words, they are pastures that do not have to be seeded each spring.

Alfalfa is rated as the most outstanding pasture. It provides a pasture the most continuously and for a longer season than other forage crops. Alfalfa is high in proteins, minerals and vitamins.



**Red Clover** and **alfalfa-brome** rank next to alfalfa as pasture for swine. Both are similar to alfalfa in feeding values.

**Sweet Clover** during the first year makes a good pasture. During the second year it may grow rank and stemmy and hence, is less palatable.

**Brome grass** pastures are good during the growing season; however, during the dormant stage they are of little value.

**Blue grass** is good in the early spring and following the fall rains, but is dormant as a rule during most of the summer. For this reason it is not rated very high.

### TEMPORARY PASTURES

**Rape** is rated as the best of the temporary pastures. Experiments have proved that it is almost as valuable as alfalfa as a hog pasture. It is frequently sown with oats. The oats come up early in the spring, providing early pasture and the rape is large enough by the time the oats get stemmy to carry the hogs through the remainder of the growing season.

**Rye** seeded in the fall will provide very early pasture. It is a good pasture early in the spring and lasts until it heads out and becomes unpalatable.

**Sudan grass** is a very good hot weather pasture. It is sown after warm weather begins and lasts until frost. If a pasture of blue grass, brome grass, or crested wheat grass, is used early in the spring and late in the fall, sudan grass makes an excellent pasture during the dormant stage.

**Oats or barley** are frequently used between the time that rye pasture is palatable for hogs and the time sudan grass comes into pasture stage.

## The Sow and Her Pigs

Ample protein should be provided for the brood sow. A protein supplement consisting of both animal and plant protein should be provided. Experimental work has also proved that alfalfa fed at the rate of 10 to 15 per cent of the ration will produce stronger, huskier pigs at birth, and that the sows will, on the average, wean a larger litter of heavier pigs. Alfalfa may make up as much as 30 per cent of the ration if the sow is in good condition and the producer doesn't want her to become overly fat. The alfalfa should be bright green in color, very leafy and fine stemmed. It can be fed in racks, on the ground, or ground and mixed with the rest of the ration.

The basic ration may be made up of the standard grains or corn. Oats are excellent to feed with enough corn to keep the sows gaining. Crushed barley, wheat or grain sorghums may replace corn in areas where such are cheaper than corn or where more readily available. The amount of these concentrates consumed will vary with the size and condition of the sow. Younger sows will generally require more than older individuals due to the fact that they are still growing.

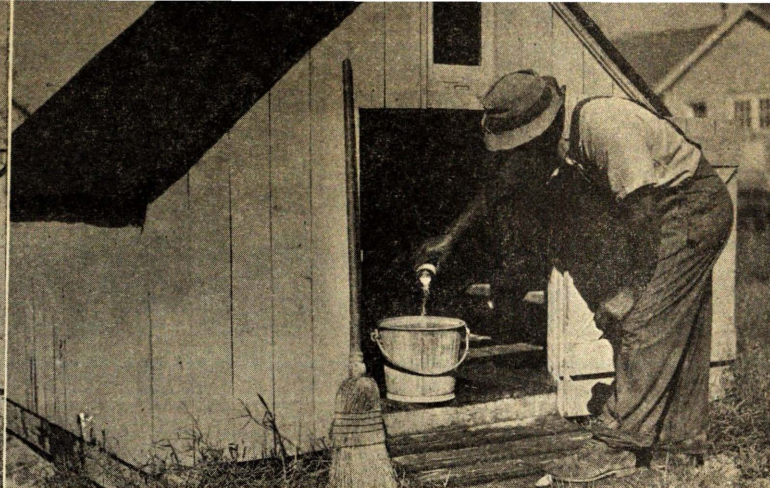
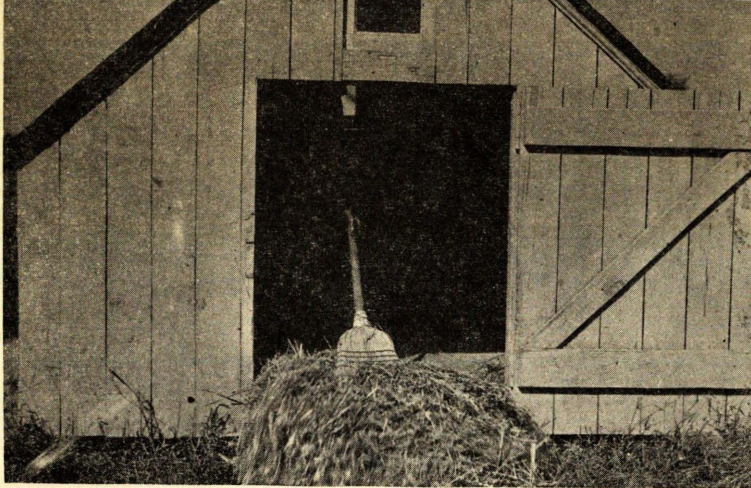
Skimmilk or butterfat fed at the rate of one gallon per day per sow along with barley and oats with alfalfa hay makes a satisfactory ration.

### Separate from Rest of Herd

A few days before farrowing the sow should be separated from the rest of the hogs and scrubbed with warm soap and water to remove the dust and dirt from the body. Quite often this dirt on the sow from the old hog yards will contain thousands of worm eggs. The sow should then be placed in the farrowing pen which has been scrubbed out with boiling lye water, using one

At Top, Providing Needed Nutritive Requirements for Bred Sows by Feeding Alfalfa Hay with a Self-Feeder. Center, Feeding Ear Corn Some Distance from the House in the Winter Insures that the Brood Sow Gets Needed Daily Exercise. Bottom, Washing the Sow Before Placing Her in the Farrowing House Is a Good Sanitary Measure.





pound of lye to 30 gallons of water. The pen should also be disinfected by spraying with a 4 percent standard disinfectant such as coal tar dip or creosol.

A reduction in the concentrate ration is advisable prior to farrowing. A ration consisting of whole dry oats, or a light slop of ground oats and bran is all the feed needed. Plenty of water should be provided. Immediately before farrowing all feed can be withheld. After farrowing the light ration should be continued for three or four days. Heavier feeding may be started and after 10 to 12 days the sow can be on full feed.

Experienced hog-raisers find it advisable to separate the sow from the rest of the herd a few days before farrowing and shut her in the farrowing pen particularly at night. The sow may be let out during the day to allow her to exercise and to help prevent constipation.

Guard rails and brooders are a good means for preventing a sow from laying on her pigs. Brooders also prevent drafts and keep the baby pigs warm. Guard rails should be constructed around the quarters eight inches from the floor and projecting eight to ten inches from the walls. Better still is the plan of partitioning off the corners with 2 x 4's at a height to give eight to ten inches clearance.

### Be on Hand at Farrowing Time

If a sow has been fed a well-balanced ration during the preceding months; has taken plenty of exercise and is in a strong, active condition, she will cause little concern at farrowing time. However, it is generally advisable to be on hand, because by so doing, the number of live pigs saved per litter may be increased.

If farrowing takes place during the early spring months, some type of artificial heat such as a brooder should be provided. With individual houses, banking with straw is a good safeguard. If it is cold, have a basket with some warm bricks covered with a gunny sack. Dry the pigs and put them in the basket until the sow is through farrowing. The instinct to nurse should be satisfied. The attendant should assist the weaker pigs to the teat. The first milk of the mother acts as a "purgative," initiating the functions of digestion. It is highly important to a satisfactory beginning in life.

The afterbirth should be removed as soon as the sow has cleaned. It should be burned or buried. If it is allowed to remain in the pen, she may eat it, which is believed by many to encourage the development of pig-eating habits. Dead pigs should be removed for the same reason. A few hours after farrowing, the pen should be cleaned thoroughly and fresh litter supplied. Air-slacked lime scattered on the floor has a cleansing, drying effect.

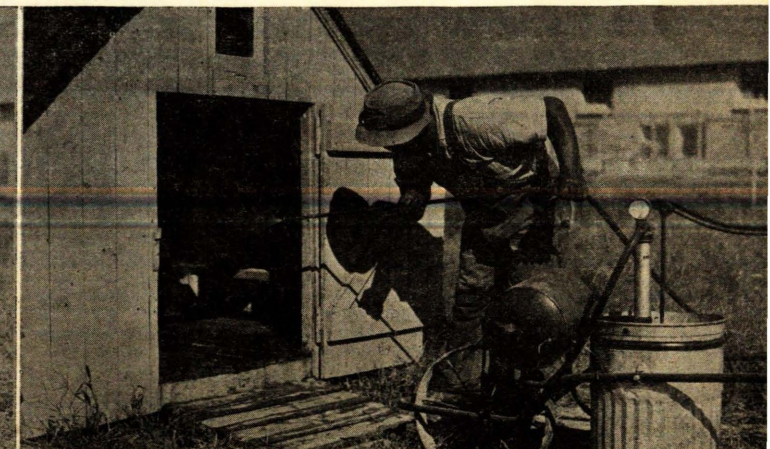
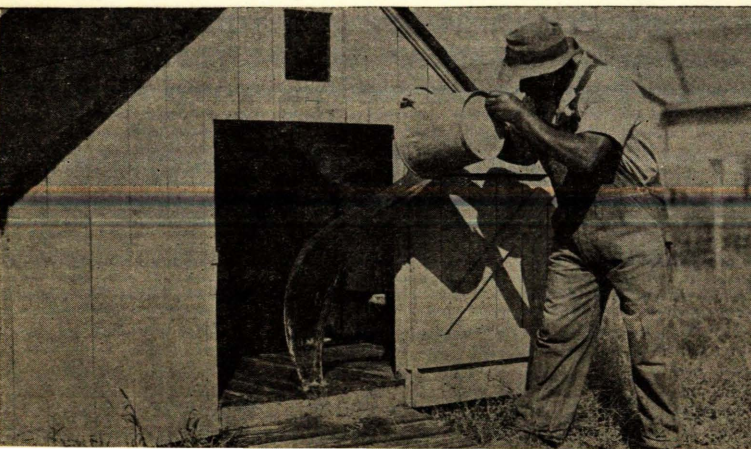
**Remove the Needle Teeth.** As a rule, experienced hog raisers recommend the removal of the needle or "wolf teeth" of all pigs in the litter. This is primarily to prevent laceration of the lips and gums of the pigs. These cuts and abrasions may become infected and a sore mouth may result. Two of these teeth will be found in each corner of the mouth, making eight in all. The teeth are removed at birth with a pair of side-cutting forceps made for that purpose. The effort should be made to get a clean break without leaving any jagged splinters.

**Mark all Pigs.** It is necessary that pigs in all litters be marked if one is to keep a record of the breeding and wishes to maintain a purebred herd. Even if registered stock is not maintained, it is advisable to mark the pigs and keep a record of them as only through such method can one select desirable gilts from the larger and more efficient litters. Marking generally consists of notching the ears with a special tool or by using a large size leather punch. Although numerous systems of marking hogs are used, producers quite generally throughout South Dakota find the method illustrated on page 7, simple, easy to remember and adapted to marking a large number of hogs.

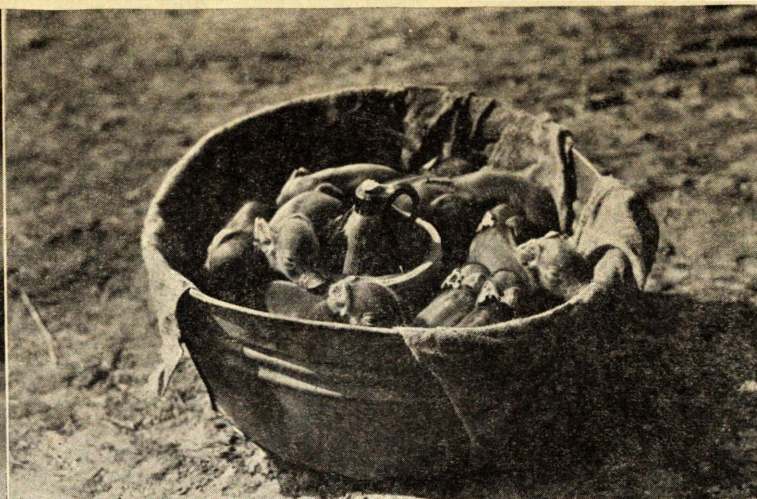
### Sanitation Is Important

It was previously mentioned that the initial steps in hog sanitation were the washing of the pregnant sow and placing her in a farrowing pen which had been cleaned, scrubbed with boiling lye water and disinfected. The farrowing pens should be kept clean and well-bedded at all times. Pigs or hogs kept in damp, dusty over-crowded conditions are likely to develop colds, rheumatism or pneumonia. After the pigs are 8-10 days old, they are ready to

**A Thorough Cleaning, Scrubbing with Hot Lye Water, Followed by Disinfecting of the Farrowing House, Reduces the Danger of Round Worms, Scours, etc. in the Pigs.**







be moved out on clean ground and pasture. To avoid reinfesting the sow and initially infecting the pigs with worms from contaminated ground, the sow and litter should be hauled, and not driven, to the pasture. If possible the pasture should be one upon which hogs have not been pastured for two or more years. Once the sow and litter are on clean pasture many of the problems of management are solved.

**Preventing Anemia.** To prevent anemia in baby pigs, some form of iron should be provided. This can be done in two ways. One method is to provide sod or dirt in the pen from clean ground. Some producers take the added precaution of sprinkling the sod or dirt with a saturated solution of ferrous sulphate. The other method is to paint or spray the sows udder with the ferrous sulphate solution. This should be done within three to four days after farrowing. To make the ferrous sulphate solution merely add the crystals to warm water. When the crystals no longer dissolve, the solution is saturated.

**Housing.** The small individual A-type hog house is probably the most economical for the sow and litter. Such a house can be readily moved to clean ground and offers adequate protection from the weather. The two-sow house is also used a great deal in Eastern South Dakota.

The central type of house is adapted to large herds; is excellent for early spring farrowing and facilitates chores during cold weather. The central pig house, however, complicates the parasite and disease problem unless special attention is given to the cleanliness of the pens and freshness of the surrounding lots.

**Castration.** Pigs should be castrated during the suckling period, preferably between four and five weeks of age. At this early period the pig experiences very little setback and there is less danger of infection. The operation is not complicated. It is advisable to use some precautions such as having the pigs as empty as possible of feed; avoid warming them up when penning them; use some standard disinfectant following the operation, such as 4 percent coal-tar dip solution; be clean about your person and place the pigs on a clean pasture afterward. Avoid a dusty dry or a muddy lot.

**Orphan pigs.** Practically every hog-raiser sooner or later, is confronted with the problem of raising orphan pigs, which have been left through the death of the sow or the failure of the sow to

produce enough milk. Quite often the problem can be effectively handled by switching the pigs to a sow with a smaller litter. If this is possible, it is generally much more satisfactory than hand-feeding.

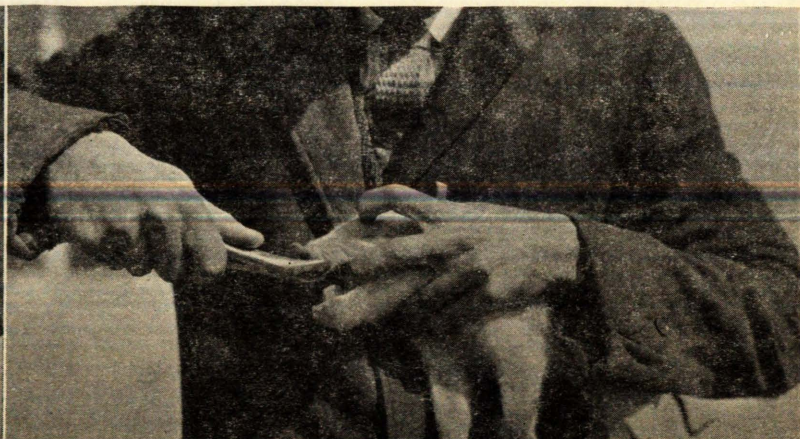
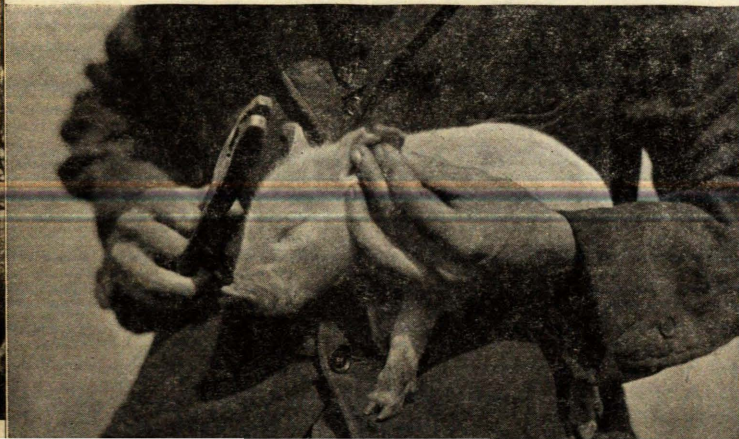
The Iowa Experiment Station, which has conducted extensive trials in raising orphan pigs, offers the following suggestions.

1. If possible allow the pigs to secure some of the first or colostrum milk of the sow.
2. Dispense with the bottle and nipple and teach the pigs to drink out of a flat pan, which can be easily kept clean.
3. Feed the pigs each two or three hours the first few days. The second week the number of feedings can be reduced to five or six per day; the third week to three or four daily and later to three feedings per day.
4. The orphans should not be over-crowded.
5. A quart of whole milk per pig each day is the most satisfactory. Where whole milk is not available, skim milk or buttermilk may be used. Modification of whole milk by adding cream or sugar proved undesirable in the Iowa tests. There was also no advantage in adding casein, blood meal or linseed oil meal to the milk to increase the protein content.
6. Shelled yellow corn, tankage and a half mixture should be provided free choice. One raw egg to each pig daily proved beneficial.

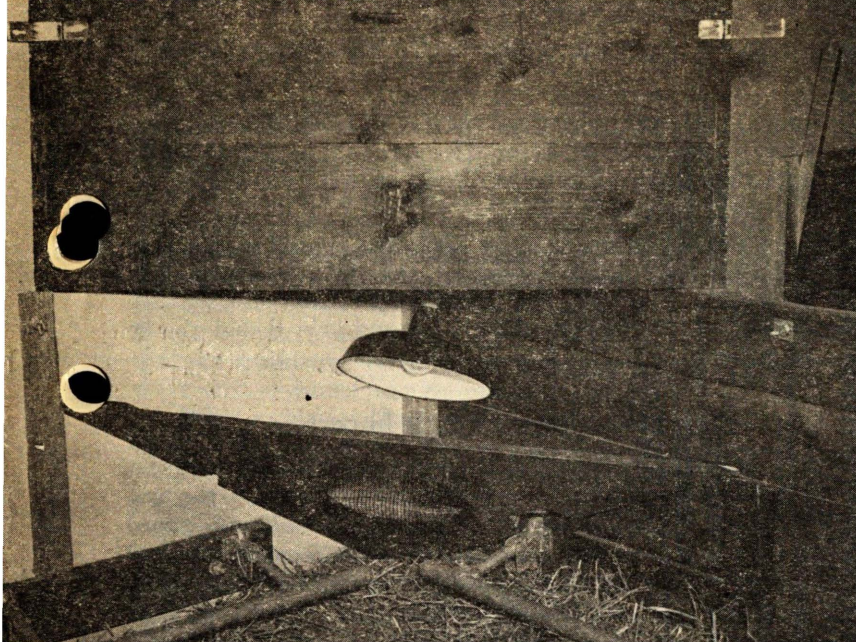
### Don't Feed Sow for 24 Hours

After farrowing it is unnecessary to feed the sow for at least 24 hours, although an abundance of drinking water should be provided. On the second day a light feed of bran, ground oats or shorts may be fed. Following, a light ration of half corn and half oats can be gradually increased until 10 days when the sow is on full feed. The amount of milk produced in the sow is influenced by the amount of feed given.

The object is to feed so that the milk flow of the sow is gradually increased as the pigs become older. Too rapid a stimulation of milk may cause scours in the pigs. A good plan is to feed all the sow will consume without scouring the pigs. An appearance of scours should be accompanied by a reduction in the feed of the







New Born Pigs Should Be Wiped Dry, Placed in Basket or Tub with Artificial Heat. A Jug of Hot Water, Warm Bricks or an Electric Brooder May Be Used. Pigs Should Be Marked the Same Day They Are Farrowed and Needle Teeth Removed If Necessary. At Upper Right, This Berkshire Family Is Contented and Comfortable in Their Well-Bedded Farrowing Pen, Protected by Guard Rails and Heated by an Electric Brooder.

sow. Feeding a few handfuls of bloodmeal to the sow has been found effective in stopping scours in the litter. Thoroughly cleaning the pens is also a good control measure. Care should also be taken at this time not to feed sour, moldy or fermented feeds, as such may cause further digestive disturbances in the pigs.

The best ration for a nursing sow is the one which is the cheapest and most productive of a large milk flow. At the same time the ration should contain protein to grow normal bodied pigs. Skimmilk, buttermilk and tankage are probably the most satisfactory protein supplements to corn, barley or oats for feeding the nursing sow.

**Creep-Feeding Pigs.** Where the sow and litter are not to be self-fed, additional feed should be provided for the pigs. The most satisfactory method of giving the extra feed is by means of the "creep." The creep is merely a small pen containing feed into which the pigs can go, but the sows cannot. In making the creep, have the slats opening in a vertical direction instead of horizontal and close enough together to allow the pigs, but not the sow, to get into the creep. Requiring the pigs to drag themselves down under a board every time they want feed is likely to cause low backs in later life. This is especially important to the individual producing purebred hogs.

The pigs will begin eating at about two weeks of age and shelled corn will probably be the first feed they will take. Corn and barley with 5 percent tankage, or hullless oats will make a good feed for the creep after the pigs begin eating. A common feed trough can be used in the creep, however, many hog raisers find the self-feeder the most advantageous.

## Preparing for Show and Showing

### Start with a Good Animal

Selection of the animal is the first factor to consider in preparing to show. The animal chosen should show characteristic breed type, style, smooth and uniform throughout, strong arch of back, deep side and plenty of quality. The individual should stand squarely on all four legs, well up on the toes with adequate size and substance of bone.

In selecting a pig, select one that is large and growthy for his age. Avoid a pig for show that is coarse or open in the shoulders, rough sided, heavy jawed, weak of pastern or off type. Fat hogs should show excellent finish. Breeding hogs should be just well

conditioned. Pigs should be kept in strong, healthy, smooth flesh. Mature animals should be kept in full smooth flesh with good appetites.

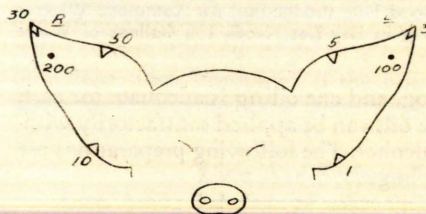
**Washing** the animals should be done two or three times before showing. Older animals will require more frequent washings than younger animals. Soft water and a good cleansing soap, such as tar or cocoanut-oil soap, which lathers well, should be used. Add a small amount of dip in the water. This will free the pig from any lice. It is a good plan to wet down the hair a while before the soap is applied. This will soften the dirt.

The soap should be thoroughly rinsed out of the hair after washing. Brushing off the water in the direction of the hair slope will shorten the time for drying and will help train the hair. The last washing, when practical, should be done not later than one day before the show. Plenty of straw will help keep them clean.

**Oiling** the hog has the effect of softening the skin and hair and giving the necessary "bloom" to the coat. Use oil sparingly. It is not the quantity of oil, but rather the method of application that counts. The oil application may be prepared late in the day preceding the show. Sprinkle oil on a brush and distribute it over the pig by brushing carefully in the direction of the hair. After the oil has remained on the pig overnight, it has dried enough so that the hair will take an excellent polish, when the pig is groomed with a brush and woolen cloth before going into the ring. When the pig goes to the ring there should be no excess oil on the hair. A heavy coat of oil during hot weather is undesirable because the pig overheats more easily. Oil interferes with normal evaporation. In warm weather some showmen use no oil but sprinkle water on the pigs before entering the ring.

For the red breeds a colorless oil should be used. It may also be used for the black breeds. Some herdsmen add a little lamp black for the black breeds. However, lamp black is not recommended; the use of oil only is preferred. The vegetable oils are probably the easiest and safest. One-fourth of a pint should be

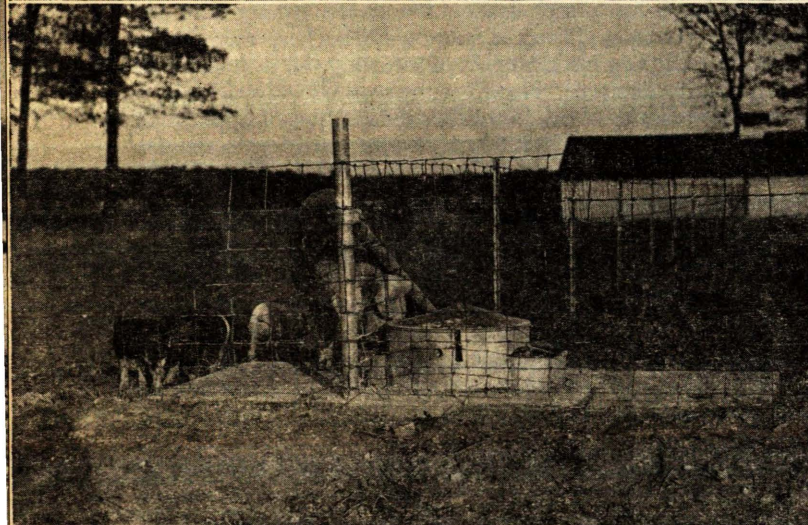
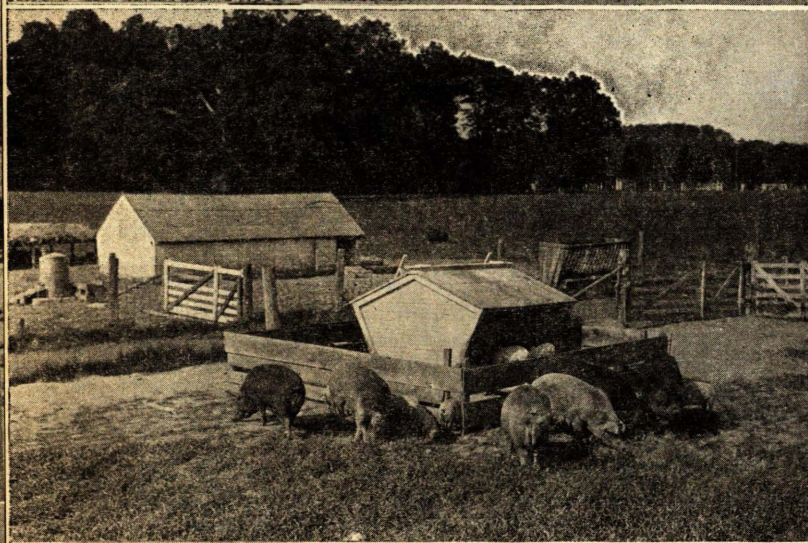
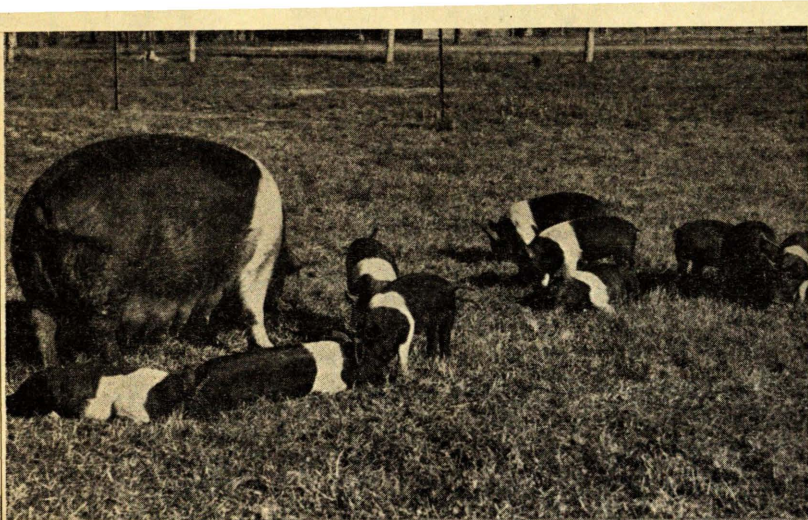
### A System for Ear-Marking



The ear notches are numbered as indicated and the numbers added to get the number of the pig. Number 2 is obtained by making two notches on the lower left ear. To obtain No. 4 combine (3 and 1); for 6, combine (5 and 1); for 8, combine (5

and 3); for 9, (5 and 3 and 1); for 11 (10 and 1); for 13 (10 and 3). On the right ear arrange similar combinations of 10, 30, 50 to obtain 20, 40, 60, 70, 80 or 90. The number 138 could be indicated by a hole in the left ear, a notch in the tip of the right ear, a notch in the tip of the left ear and a notch on the top of the left ear.





Top, A Hampshire Sow and Her Litter of 10 Husky Pigs on Good Pasture Early in the Season for Cheaper, Faster Gains. Center, Young Pigs that Are Creep Fed Make More Rapid Gains. Bottom, An Adequate Supply of Fresh, Clean Water Is a "Must" for Good Hog Production. An Automatic Waterer Makes it Easy. A 100-Pound Pig in Dry Lot Needs 1 1/4 Gallons of Water Daily.

enough for a 200-pound hog, and one oiling is adequate for each show. The edible vegetable oils can be applied satisfactorily without gasoline, kerosene, or alcohol. The following preparations are also used for red and black hogs:

1. One pint cottonseed oil, four ounces wood alcohol.
2. Two-thirds linseed oil, one-third gasoline.
3. Two pints light colored mineral oil, thinned with a pint of kerosene, can be used for pigs of any color.

For dressing white breeds, it is customary to apply a dusting powder such as powdered soapstone to which has been added a very

small amount of marine blue. The blue counteracts the tendency of the powder to show yellow. This powder is usually dusted on with a sifter-top can just before the pig enters the showing.

**Clipping** the hair off the inside and outside of the ears will improve the appearance of the head. The clipped parts should blend smoothly into the unclipped parts. In trimming the tail, leave a good brush at the end and a smooth connection at the base. Occasional long hair about the head and jowl should also be trimmed off.

### Trimming the Feet Is Important

Trimming the feet is an important detail in fitting hogs for show. In trimming the feet most emphasis is placed on the toes. However, the dew claws should also be cut back and dressed down neatly. Short dew claws make the pasterns appear short and straight. When the toes are too long, it has the effect of increasing the slope of pastern, and making them appear weak. Cut back the toes almost even with the sole of the foot.

When the excess growth of the horny part of the toe is cut away with a knife, the cutting should begin at the rear. A pair of small nippers can be used and an eight-inch rasp is convenient for use in shaping up the foot afterward. If a large number of hogs are to be trimmed a lifting-crate will be found useful. A common shipping crate can be used. A pig could also be laid on his side and his feet tied before trimming. Care should be exercised in trimming the feet, for if they are cut too short lameness may develop. The last trimming should be done not later than two weeks before the show. If the feet and foot pads seem dry and hard apply neat's foot oil or wool fat occasionally. This will soften the pads and tend to relieve soreness.

**Removing the tusks** gives the male pig or hog a more desirable showing appearance. A noose, made out of a rope or several strands of smooth baling wire, can be placed around the upper jaw. The boar is tied to a post and the tusks clipped out with a bolt cutter or with a pair of nippers.

**Training the pig to show takes time**, but is essential for exhibiting to the greatest advantage. A number of methods of showing are used. Some herdsmen use a whip. Others prefer the stockman's cane. A small hurdle can be used with a cane for training of the pig. It is sometimes used while showing. The use of a hurdle while showing, however, is usually a confession of inadequate training of the pig. Hurdles are most in use when showing boars. Training and showing with a cane is probably the most commonly recognized method.

It is probably necessary to begin training the pig in a pen. Observe how the animal shows to the best advantage and train it to show that way. Do not make a pet of a show pig as it is generally a disappointment in the show ring. A pig that is very gentle relaxes too much to show with adequate style. However, the pig should be sufficiently gentle so that it will not continually insist on running away. He should be taught to stop when the cane is laid gently across the face. A slight tapping of the cane should be sufficient to cause him to move. It is as important that the pig be trained to walk freely straight ahead, as it is to train him to stand properly. The judge usually requires a demonstration of both. Little courtesies to remember about showing hogs are:

1. Be able to answer questions concerning age promptly.
2. Keep the pig between you and the judge.
3. Do not over work your animal.
4. Refrain from talking to the judge and don't argue if not satisfied with the placing.
5. Be on time in getting your exhibit to the ring.
6. Be a good sportsman at all times. It will make many friends and give you favorable contacts.



# Selling Hogs Profitably

## Studying the Market Pays Off

The successful hog producer makes a study of market conditions as well as problems of production. The producer has felt for entirely too long a period that his interest ceased with the production of hogs to a marketable weight. The ultimate success of the enterprise will depend on marketing methods. By a little study of the major phases of marketing the producer can adjust his production and marketing technique to meet some of the problems which seem to detract from the profits of his business.

**When to Market Hogs.** September and April are generally recognized as the two months of average higher hog prices in the year. Hog prices are high in September because most hogs are grassed through the summer and are fed off on the new grain and corn crop and are not yet ready for market. Accordingly, there is a shortage in hogs on the September market, with a resulting higher price. April prices are high because most hogs have been sold earlier in the year, and fall farrowings, wintered on limited rations, are not ready for market. It should be understood that these conditions are average and do not always apply to specific years.

The most important influence affecting the farmer's decision as to the number of sows to breed or the number of hogs which can be profitably marketed seems to be the relation between feed prices, especially of corn and the prices of live hogs during the months immediately preceding the breeding season. This relationship is known as the "corn-hog ratio," and means the number of bushels of corn required to equal in value 100 pounds of live market hogs. A corn-hog ratio of 12, for example, means that the prices are such that 12 bushels of corn is equal in value to 100 pounds of hogs.

**A high or favorable corn-hog ratio, above 12.6, means cheap corn and high-priced hogs and a profit to the feeder. A low or unfavorable ratio means high-priced corn and low market prices for hogs and a loss.**

The effect of a low ratio is to cause a reduction in the number of sows bred during the subsequent breeding season, while a high ratio tends to increase the number bred. Generally, an upturn in the ratio is accompanied by a reduction in total hog slaughter. The corn-hog cycle and hog-production cycle tend to move in opposite directions and each cycle is generally about five years duration. When hog prices are high relative to corn, production is stimulated and the volume of receipts reaching market one to two years later increases; an unfavorable ratio in any year discourages production and tends consequently to reduce market supplies one to two years later.

## 225 lb. Hog Usually Best Price

**Weight to Market Hogs.** South Dakota packers prefer market hogs ranging in weight from 180 to 240 pounds. A hog weighing about 225 pounds is probably the most desirable. Hogs marketed at weights less than 200 pounds have, in most cases, cost more per pound of gain, because of higher priced feeds necessary for early growth. Costs per pound of gain will also tend to increase at weights much over 200 pounds. As the hog gets larger, and especially as he matures, it requires more feed to put on each additional pound of gain. Produce what the market wants and little difficulty will be experienced in finding a good market.

## Parasite Control for Hogs

### Three Common Parasites

The three most common parasites affecting hogs in South Dakota are the round worm, the mange mite, and the louse. Recent developments in parasite control have greatly simplified the job of control of these parasites.

**Round worms** in swine cause considerable digestive disturbances in pigs. The infestation may become so severe that death results, but as a rule the pig is greatly set back and stunted. There is

no known estimate as to the cost of round worms in South Dakota. It is known that the presence of worms greatly increases the cost of production due to inefficient use of feed.

The most desirable control measure is the eradication of the worms through the McLean county system of sanitation. This system includes scrubbing the sows before putting them in a farrowing pen that has been scrubbed with hot lye water. The baby pigs and sows are kept off ground or premises contaminated with worm eggs. As soon as possible the sow and pigs are hauled to a pasture in which no pigs have been for at least two years. In this system the worms do not have an opportunity to infest the pigs. If the pigs do become infested, then the most effective and economical treatment is as follows:

After weaning, worm the pigs. Most recent U. S. Department of Agriculture recommendation is sodium fluoride, the most effective worming agent to date. It should be used at the rate of one pound per 99 pounds of dry, ground feed. If the pigs are being fed ear corn, shelled corn, or whole grain, switch to ground feed for three to four days before worming.

This will give the feeder some opportunity to become acquainted with the amount of feed eaten daily. If the pigs are self fed, merely substitute the treated feed for regular feed in self feeders for one day, cleaning out the feeders that night and putting in untreated feed. If hand fed, feed the treated feed in normal amounts both morning and night and for one day, resuming with regular feed the next day. In either event, **FEED THE TREATED FEED FOR ONLY ONE DAY**, and upon the completion of this day, either destroy the treated feed or store it away in a safe place.

### CAUTION

Sodium fluoride is a poison and should be regarded as such. The treated feed is a poison to other livestock.

Do not starve pigs a day before administering the treated feed.

Do not feed the treated feed as a slop.

Do not feed the treated feed to pigs with scours.

If the pigs become reinfested, they may be treated again at five months of age.

**Mange.** Mange is a contagious skin disease causing the pigs to become unthrifty and lose flesh. The disease is very wide spread in South Dakota and is responsible for a great loss to the hog growers.

Scabies or mange is caused by a mite. This mite spends its entire life on the hog. The mange mite is very small and can be seen only through a magnifying glass. A new generation develops every 10 to 12 days. One female may lay 10,000 eggs. The mite digs holes into the skin and covers itself with a crust.

A hog which is mangy may spend a large part of his time scratching. The mites set up an irritation to the skin. The condition is generally first noticed on the legs and then spreads to the sides and finally all over the hog. The skin develops little pimples about the size of a pin-head. Later the skin becomes thick and rough. Frequently the skin will crack open. The skin of the hog may look like the hide of an elephant and the disease is sometimes known as "elephant hide."

Mange is spread only by contact; that is, one hog rubbing against another or rubbing against the same post. These mites do not crawl any distance. If the mite is kept off the hog, he will die in a short time. Therefore, if the hogs were kept out of a hog house for 30 days the house would again be safe as far as mange is concerned.

### Lice Are Serious Parasite

**Lice.** A hog louse is a blood-sucking parasite. The entire life of a louse is passed on the hog. The female glues the eggs to the hairs and the eggs hatch in 12 to 14 days. The average female will lay about 90 eggs. A favorite location for lice is inside the ears.

Lice occur frequently on hogs and cause considerable irrita-



tion. They obtain their food by puncturing holes in the skin. Such an irritation to the skin causes the animal to rub and scratch. When a hog is rubbing and scratching most of the time he is not taking on weight.

Both mange and lice are easily controlled by the use of benzene hexachloride in the form of a spray.

If mange or lice appear, spray the sows and pigs with benzene hexachloride. One treatment should eradicate mange from the animals. Should it appear later on, another treatment should be given. If any of the gilts or the boars show any symptoms of mange in the fall, they should be sprayed before bad weather sets in so as to be assured of mange free sows. Use one of the recommended solutions below:

32 lbs. of 6 per cent gamma isomer BHC per 100 gallons water  
16 lbs. of 12 per cent gamma isomer BHC per 100 gallons water  
8 lbs. of 25 per cent lindane per 100 gallons of water.

For smaller quantities this amounts to—

1¾ lbs. of the 6 per cent mixture per 5 gallons of water  
1 lb. of the 12 per cent mixture per 5 gallons of water  
½ lb. of lindane or 25 per cent concentrate per 6 gallons of water.

Be sure the hogs are well covered with the solution, taking special care to be sure the ears, inside and out, the area under the legs, and the belly are well sprayed.

## Production Testing of Swine

All of the breeds are putting emphasis on production records and many of them have united in the same production registry qualification. These qualifications are naturally high, but through the use of them, most associations feel they have made considerable progress in finding and giving credit to their better producing sows and boars. The qualifications set forth for many of the breeds are as follows:

1. Both sire and dam of the litter must be registered.
2. There shall be no inverted nipples, nor hernia present in the sow.
3. To qualify there must be at least eight live pigs farrowed. There must be no ridglings (one testicled boars) or pigs with hernia in the litter.
4. Eight or more pigs must be raised to 56-day weights and the litter weight at 56 days of age must be at least 275 pounds if the gilt is under 15 months of age or 320 pounds if the gilt or sow is 15 months of age or older.
5. A sow will be admitted to Production Registry when she has raised two qualifying litters.
6. Reports to be sent in include:

A farrowing report to be sent in within five days of the farrowing date.  
A 56-day weighing report to be sent in within three days after the pigs are weighed. The pigs may be weighed between 51 and 61 days of age.

Both forms must be signed by a disinterested third party who should witness the ear-marking of the litter and also the weighing at weaning time.

The disinterested third party may be any disinterested third party such as the county agent, the assistant county agent, vocational agriculture instructor, cow tester, or representative of the breed association.

For the further information concerning production registry, contact your breed association which will be glad to send you complete information concerning this program.

## Diseases of Hogs

DR. G. S. WEAVER\*

### Swine Erysipelas Appears Suddenly

**Swine Erysipelas:** Swine erysipelas is a disease that affects hogs of all ages. The organism causing it is technically named "erysipelotheix rhusiopathiae." The first recognized case in South Dakota was in 1930 and the disease gradually spread to Nebraska and other Corn Belt states. It has continued to be a more or less serious disease since that time. The disease occurs most often during the spring, summer and fall. It is possible for other domestic animals to become infected.

Acute swine erysipelas is characterized by its sudden onset and many swine in the herd may be infected at the same time. Many of the hogs will run a very high temperature. The sick hogs

\*Extension Veterinarian

will show a general weakness. The chronic cases frequently develop large joints. Several hogs may die quite suddenly. However, as a rule only a few hogs die and some may make complete recovery while the rest remain unthrifty chronics.

It is difficult to make a diagnosis without a laboratory examination. The disease may be confused with hog cholera. The services of a veterinarian should be secured when the disease is suspected.

The organism that causes this disease may live in the soil for considerable period. Sanitation plays an important part in the control of the disease. A thorough cleaning and disinfection of the hog pens is very necessary.

Swine erysipelas serum has been available for some years but it has certain limitations. Serum alone will produce immunity for about three weeks. In recent years a simultaneous treatment has been developed which is more successful in producing a longer immunity.

### Cholera Is Most Devastating Disease

**Hog Cholera.** Hog cholera is a highly contagious disease of swine only caused by a virus, characterized by high fever, general weakness and death. Sanitary measures can not be over emphasized in the control of this disease. Immunization is a practical procedure and should be considered a part of the cost of production.

Hog cholera is the most devastating disease that occurs among hogs. It causes enormous economic losses. Since 1914 the general trend of losses has been downward due to greater regulatory activities and the more common use of immunizing methods.

The virus that causes this disease is somewhat resistant to weather conditions and may live over from one year to another if not exposed to sunlight. The virus enters the hog by way of mouth on contaminated feed. It may be carried from one farm to another by anything carrying particles of dirt. It is spread by direct contact from one hog to another. This virus may be killed by any of the common disinfectants.

The first noticeable symptom is a high fever followed by a general weakness. There are three main types of the disease known as "acute," "subacute" and "chronic." The very sick hogs live only a few days. Those affected with the milder type may last a week. The chronic type is not so common but a few will recover. The disease is commonly manifested by constipation at first and later a profuse diarrhea. In order to secure a definite diagnosis, the services of a veterinarian should be secured. He can advise as to the care of the herd and take care of the vaccination.

Vaccination against hog cholera is a thoroughly tried procedure and has been definitely proved that it will prevent hog cholera. There are three types of vaccination used at the present time. The first and most important is called the "simultaneous" treatment. This consists of giving serum and virus at the same time. The serum builds up the immunity while the virus exposes the hog and makes a permanent immunity. The best time to use this treatment is when the pigs weigh about 40 pounds. They are large enough to produce a permanent immunity and small enough to produce a permanent immunity and small enough to be easily handled. The smaller the hog the less the cost. The vaccination in the sick herd is not very successful. It is much better to prevent hog cholera by vaccinating the pigs in the spring of the year before the hog cholera season.

Two other types of vaccines are being used with various advantages and disadvantages. They are called the "crystal-violet" and the "tissue vaccine." The advantage of these two vaccines is that they are less expensive and there is no chance of producing hog cholera by their use. The disadvantages are that they do not produce a permanent immunity and there is no immunity for three weeks after the treatment is given. These vaccines are commonly used on commercial herds where all hogs are to be marketed and none saved for breeding purposes. The immunity produced by these vaccines will last only about eight months.



## Unsanitary Conditions Leads to Necro

**Necrotic Enteritis:** Necrotic enteritis called necro is an inflammation of intestines characterized by the death of the tissue lining the intestines. It is frequently a complication of some other disease and there is some difference of opinion as to exact cause. Lately the relation of swine nutrition to the development of this disease has been given attention. Any unsanitary condition predisposes pigs to this disease.

There are a number of different organisms involved in causing this disease but probably the *Salmonella* group is the most prominent. These organisms are present around barn lots waiting for an opportunity to infect pigs with the low resistance.

Necrotic enteritis generally begins with a rise in temperature, diminished appetite and diarrhea. Sick pigs and many deaths may be expected. It is common in pigs weighing 40 to 60 pounds. On post mortem examination, a "necrosis" of the lining membrane of the intestines is evident.

Various remedies have been used for necrotic enteritis but as a whole they have been unsatisfactory. Experiences show that it is more profitable to adopt adequate preventative measures. Rigid sanitation has proved to be effective in the prevention of this disease. When the disease has become established in a herd, separate the apparently healthy pigs from the sick ones and place the healthy pigs in clean quarters or on ground not previously used for swine. Sanitation coupled with proper nutrition will go a long way toward preventing this disease.

## Unsanitation Also Causes "Bull Nose"

**Necrotic Rhinitis and Stomatitis.** Necrotic rhinitis, or so-called "bull nose," is most frequently observed in growing pigs. It is characterized by swelling and enlargement of the tissues of the nose and face, including the bony structures, which results in more or less deformity. There are also "necrosis," or destruction, and sloughing of the tissues of the snout, lips, and other parts of the mouth. Filthy surroundings or generally unsanitary conditions make pigs susceptible to bull nose infection.

One of the first symptoms noted is a partial loss of appetite. Many of the infected pigs have the sniffles. The snout is enlarged and lumps or swellings may be seen on some parts of the face. When these swellings are opened they are found to contain a "cheeselike" material which has a disagreeable odor. In many cases the bones of the nose and face are destroyed. The pigs become weak and emaciated.

The swellings may be opened and as much as possible of the puslike material should be removed. Half-strength tincture of iodine should then be injected into the cavity. Bad cases involving the destruction of bones of the nose and face might well be destroyed. All sick pigs should be separated from the well pigs. Those not affected should be removed to clean sanitary quarters. Cleaning and disinfecting the hog lots is important. The sore mouth form of this disease is caused by the same organism as that which causes bull nose. These sore lips may be scraped and painted with tincture of iodine.

## Scours Serious in Young Pigs

**Scours.** The annual loss of young pigs due to scours is very large. The trouble has been attributed almost entirely to faulty nutrition and lack of proper housing, care and sanitation.

The condition is usually recognized by its common symptom, a diarrhea. The ailment soon spreads to all the pigs in the litter, particularly when the pens are not cleaned and disinfected. The pigs may scour a few days, stop suckling, die or be unthrifty.

It is a common practice to treat the pigs by giving some medicine such as castor oil but this treatment offers little chance of success unless attention is given to providing clean quarters, proper care and feeding of the mother and general sanitation. Pregnant sows should be fed a balanced ration. The grains should be supplemented by alfalfa or alfalfa meal. The pregnant sows should not be allowed to become too fat and they should receive a

reasonable amount of exercise. After farrowing a sow should not be fed anything for twenty-four hours but she may be given water in the meantime. The farrowing pen should be prepared by washing it out with hot lye water followed by disinfecting the sides and walls. Keeping newborn pigs warm and dry is important.

## Minerals Important in Ricket Prevention

**Rickets.** Approximately 70 per cent of the mineral content of the animal body consists of calcium and phosphorous. An insufficient supply of these two minerals or an unbalance proportion of these minerals are largely responsible for rickets in pigs. An inadequate amount of vitamin D may also be a factor. Rickets is characterized by a failure of the growing bone to harden properly. The bones of the legs are the most likely to be visibly affected.

The symptoms are enlargement of the joints, particularly the knees and hocks, with a curving of the pasterns which interferes with walking. These malformed bones may cause considerable pain and they are easily broken.

Hogs are normally fed heavily on grains and may not receive an adequate supply of calcium. Usually there is a sufficient amount of phosphorous present in grains but if calcium is not supplied the ratio is out of proportion. Direct sunlight may supply sufficient vitamin B but during the winter hogs do not get enough direct sunlight. Successful treatment depends on supplying adequate amounts of vitamin B and adjusting the ratio of calcium and phosphorous. Alfalfa is a good source of vitamin D and calcium. Cod-liver oil and other fish oils are effective in helping to prevent rickets in pigs. A mineral mixture containing equal parts of ground limestone, steamed bone meal and common barrel salt is a good mineral mixture to keep before the pigs at all times.

## Abortion May Indicate Brucellosis

**Brucellosis.** While the loss from brucellosis in hogs may not be as great as in cattle, nevertheless, the disease is seriously interfering with the swine industry. It is a chronic infectious disease characterized by abortion, the birth of stillborn or weak pigs and temporary or permanent sterility.

The germ that causes swine brucellosis is not exactly the same as in cattle but it belongs to the same family. There are cases on record of this swine type infecting cattle although it is exceptional. Sows become infected by mating with an infected boar which is different from cattle. Also they may become infected through feed that has been contaminated by the excretions of other infected hogs. And the disease is usually brought on the place in the same manner as with cattle, that is, by bringing in infected bred sows.

The same blood test as used in cattle may be used for diagnostic purposes in hogs. While it is not as accurate as in cattle it has a practical application in determining herd infection. This test can be used to an advantage in conjunction with other methods of control from a sanitary standpoint.

No drug or medicine has been found that has any effect on brucellosis in swine. Neither does vaccination as used in cattle, give any resistance in hogs. The control and prevention of this disease must, therefore, rely on the isolation of the sick animals, quarantine of the herd and sanitary measures.

Under our present knowledge there are only two methods that offer a solution to this disease problem.

### PLAN 1

Dispose of the entire herd, clean and disinfect the hog barns and premises, and replace the herd with swine from herds which are free of the disease.

### PLAN 2

Wean the pigs at eight weeks, take them away from the infected herd and place them in a clean house and on clean ground. Have the pigs blood-tested and remove the reactors. Sell the infected sows and pigs as they become marketable but keep them away from the clean pigs at all times.

The first plan is preferable in small herds and commercial herds. The second may be used in purebred herds. When a clean herd is established, great care should be taken not to reintroduce infected sows or herd sires.



## Daily Feed Requirements

Dry Matter Pounds	Digestible Protein Pounds	Total Digestible Nutrients Pounds
<b>Wintering pregnant gilts</b>		
250 lbs.—4.3— 5.1	.50— .56	3.6— 4.2
300 lbs.—4.9— 5.9	.57— .64	4.1— 4.9
<b>Brood Sows nursing litters</b>		
300 lbs.—8.9—10.9	1.23—1.32	8.1— 9.5
400 lbs.—9.4—11.5	1.30—1.39	8.5—10.0
<b>Growing and fattening pigs</b>		
30 lbs.—1.3— 1.7	.26— .30	1.2— 1.5
40 lbs.—1.9— 2.5	.37— .41	1.7— 2.1
75 lbs.—2.7— 3.7	.45— .51	2.4— 3.1
100 lbs.—3.5— 4.6	.55— .61	3.0— 3.8
150 lbs.—4.9— 6.1	.62— .71	4.1— 5.0
200 lbs.—6.0— 7.3	.67— .75	5.1— 6.0

## Rations for Swine

### For Bred Sows and Gilts in Dry Lot

Lbs.	Lbs.
Corn ..... 70	Corn ..... 58
Tankage ..... 5	Oats ..... 32
Soybean Oilmeal ..... 5	Tankage or meat scraps ..... 10
Alfalfa Hay ..... 20	
	100
* * *	(Alfalfa hay fed free choice)
Corn ..... 30	Corn ..... 35
Ground Barley ..... 30	Oats, ground ..... 40
Ground Oats ..... 30	Alfalfa Hay ..... 25
Tankage ..... 10	
(or Soybean oil meal 5 lbs. and Tankage 5 lbs.)	100
100	* * *
	Ground Barley ..... 50
	Ground Oats ..... 50
	100
	(Alfalfa hay fed free choice plus skim milk)

Rye may be included instead of some of the grains used above, but should not constitute more than 40 per cent of the ration.

Milo may be used to replace corn or barley if it is on hand.

Sows on pasture will not require the protein that is listed above, but the same mixtures may be used with respect to grain. Cut the protein level about 30 per cent.

The corn used is shelled corn or coarsely ground shelled corn.

### For Nursing Sows on Pasture

Lbs.
Corn ..... 92.
Tankage ..... 3.5
Soybean Meal ..... 4.5
100.0
* * *
Barley (ground) ..... 65
Hulled Oats ..... 25
Tankage or Soybean Oilmeal ..... 10
100
* * *
Ground corn, milo, or barley ..... 60
Ground Oats ..... 40
Skim milk—per sow, per day 2 gallons ..... 100.0
* * *
Ground Barley ..... 30
Ground Oats ..... 30
Wheat Middlings ..... 30
Mixture of Meat Scraps, Tankage and Soybean Oilmeal ..... 10
Alfalfa leaf may be included. .... 100

### For Nursing Sows on Dry Lot

Lbs.
Corn ..... 77
Tankage ..... 5
Soybean Oil Meal ..... 8
Alfalfa Hay ..... 10
100
* * *
Corn ..... 77.
Tankage ..... 6.5
Soybean Oilmeal ..... 6.5
Alfalfa ..... 10.
100
* * *
Corn (ground or some other cereal grain) ..... 60
Wheat Middlings ..... 25
Linseed and Soybean Oilmeal ..... 15
100
* * *
Alfalfa hay self choice. .... 100

### For Pigs Creep Fed While Nursing

Lbs.	Lbs.
Ground Barley ..... 70	Corn ..... 45
Wheat Middlings ..... 20	Wheat ..... 45
Tankage ..... 10	Meat Scraps ..... 10
100	100

## For Pigs From Weaning Through 70 Pounds

Pigs on Dry Lot	Lbs.	Pigs on Pasture	Lbs.
Corn ..... 62		Corn ..... 83	
Tankage ..... 5		Tankage ..... 5	
Soybean Oil Meal ..... 23		Soybean Oil Meal ..... 12	
Alfalfa Hay ..... 10			100
100		* * *	
* * *		Corn ..... 65	
Corn ..... 66		Ground Wheat or Ground Oats ..... 20	
Soybean Oil Meal ..... 12		Tankage ..... 15	
Tankage ..... 12			100
Alfalfa Hay ..... 10		* * *	
100		Corn ..... 83	
* * *		Tankage ..... 5	
Barley may be substituted for corn in the above rations.		Linseed Oil Meal ..... 12	
		100	

Include Milk Products When Possible

### Pigs 75—125 Pounds

#### DRY LOT

Lbs.
Corn ..... 70
Tankage ..... 5
Soybean Oil Meal ..... 13
Alfalfa ..... 10
100
* * *
Corn ..... 74
Soybean Oil Meal ..... 8
Tankage ..... 8
Alfalfa Hay ..... 10
100

#### PASTURE

Lbs.
Corn ..... 90
Tankage ..... 5
Soybean Oil Meal ..... 5
100
* * *
Barley ..... 90
Tankage ..... 4
Soybean Oil Meal ..... 6
100

### Pigs 125—200 lbs.

Lbs.	Lbs.
Corn ..... 80	Corn ..... 96
Tankage ..... 5	Tankage ..... 2
Soybean Oil Meal ..... 5	Soybean Oil Meal ..... 2
Alfalfa Hay ..... 10	
100	100
* * *	* * *
Barley or Milo ..... 82	Barley ..... 97
Tankage ..... 4	Tankage ..... 2
Soybean Oil Meal ..... 4	Soybean Oil Meal ..... 1
Alfalfa Hay ..... 10	
100	100

### Hogs Over 200 lbs.—Fattening

Lbs.	
Corn ..... 84	Corn, Milo, Barley, or a mixture of the three, may be fed with no sup- plement, providing the pasture is good.
Tankage ..... 3	
Soybean Oil Meal ..... 3	
Alfalfa Hay ..... 10	
100	

### American Swine Record Associations

- Berkshire**—American Berkshire Association, Secretary—Howard J. Brant, 410 So. 5th St., Springfield, Ill.
- Chester White**—Chester White Swine Record Association, Secretary—L. P. Moore, Rochester, Ind.
- Breeders Chester White Record Association**, Secretary—L. W. Drennan, 215 Royal Union Building, Des Moines 9, Iowa
- Duroc**—United Duroc Record Association, Secretary—B. R. Evans, Duroc Building, Peoria, Ill.
- Hampshire**—The Hampshire Swine Record Association, Secretary—Rollie Pemberton, Peoria, Ill.
- Hereford**—National Hereford Hog Record Association, Secretary—Nelson Miller, Peoria, Ill.
- O.I.C.**—O.I.C. Swine Breeders' Association, Secretary—Harry E. Vernon, Goshen, Ind.
- Poland China**—Poland China Record Association, Secretary—C. G. McCahan, Galesburg, Ill.
- Spotted Poland China**—National Spotted Poland China Record Association, Secretary—F. L. Obenchain, 3153 Kenwood Avenue, Indianapolis, Ind.
- Tamworth**—American Tamworth Swine Record Association, Secretary—William T. Barr, Ames, Iowa.
- Yorkshire**—American Yorkshire Club, Secretary—Harry Krum, Valparaiso, Ind.

Pictures courtesy of Spotted Poland China Record Ass'n., United Duroc Record Ass'n., Poland China Record Ass'n., Chester White Swine Record Ass'n., Hampshire Swine Record Ass'n., American Berkshire Ass'n., and the U. S. Department of Agriculture.